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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/905,335	07/13/2001	Cyprian Emeka Uzoh	042496 0276090	6975

7590 10/25/2004  
Pillsbury Winthrop LLP  
Intellectual Property Group  
1600 Tysons Boulevard  
McLean, VA 22102

EXAMINER

MAYEKAR, KISHOR

ART UNIT	PAPER NUMBER
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1753

DATE MAILED: 10/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/905,335

Applicant(s)

UZOH ET AL.

Examiner

Kishor Mayekar

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 September 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 33-46 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8, 33-36 and 44-46 is/are rejected.
- 7) ☒ Claim(s) 37-43 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 33-36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

These claims are indefinite because they depend on cancelled claim 31.

### *Claim Rejections - 35 USC § 103*

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 1-8 and 44-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over TSAI (6,300,250) in view of either TSAI et al. (5,575,706) or UZOH et al. (5,91,619), all the references cited in the first Office action. TSAI

'250's invention is directed to a method of forming bumps for flip chip applications. TSAI '250 discloses that the process comprises the steps of depositing a layer of dielectric over a surface, creating an opening in the layer of dielectric, depositing a barrier layer over the layer of dielectric, depositing a seed layer over the barrier layer, selectively removing the seed layer using a CMP process from above the layer of dielectric leaving the seed layer intact and deposited over the inside surfaces of the opening such that the barrier layer is left intact over the layer of dielectric and inside the opening, and depositing metal bump over the surface of the seed layer left in place overlying the barrier layer (see the abstract; Figs. 2-8 and col. 7, lines 37-44). The differences between TSA '250 and the above claims are the detailing of the use of pad material in the CMP process and the application of an electric potential between the substrate and an anode.

As to the former, TSAI '706 shows a conventional CMP process using a pad material (Fig. 1). UZOH shows the same (Fig. 2). The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified TSAI '250's teachings as shown by TSAI '706 or UZOH because "the use of conventional materials to perform their known functions in a conventional process is obvious". In re Raner 134 USPQ 343.

As to the latter, TSAI '706 further discloses parameters affecting the conventional CMP process (col. 1, lines 61-66) and the application of an electric field in his CMP process (abstract). UZOH shows the same (col. 1, lines 50-59). The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified TSAI '250 as shown by either TSAI '706 or UZOH because the selection of any of known equivalent CMP processes as suggested by TSAI '706 or UZOH would have been within the level of ordinary skill in the art.

As to the subject matters of claims 3-5, it has been settled that proper adjustment of a known result effective variable or obvious process is within the capabilities of one having ordinary skill in the art. *In re Aller* 105 USPQ 233; *In re Boesch* 205 USPQ 215.

#### ***Allowable Subject Matter***

5. Because of the terminal disclaimer filed September 13, 2004, the previous obviousness-type double patenting rejection to dependent claims 37-43 are no longer maintained. However the claims are objected to as being dependent upon a

rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

*Response to Arguments*

6. Applicant's arguments filed September 13, 2004 have been fully considered but they are not persuasive.

In response to Applicant's arguments that none of the secondary references, TSAI '706 or UZOH teach or suggest using an electric potential to prevent the removal of other portions of the seed layer from the cavities during the removal of portions of the seed layer from the top surface of the substrate, the examiner finds this is to be unpersuasive. TSAI '250 discloses the use of a CMP process to selectively remove the seed layer from the top surface of the substrate leaving the seed layer from the cavities as asserted by the examiner in the first Office action and in the paragraph above. And each of the secondary references shows the use of ECM process (CMP process with the application of an electric potential between the substrate and an electrode) in addition to CMP process as asserted by the examiner in the first Office action and in the

paragraph above. As such, the selection of any of known equivalent CMP processes in TSAI '250 would have been within the level of ordinary skill in the art.

*Conclusion*

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

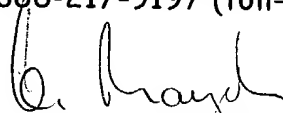
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kishor Mayekar whose telephone number is

(571) 272-1339. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Kishor Mayekar  
Primary Examiner  
Art Unit 1753